Provincial Report

Achievement Tests

September 1986

Student Evaluation

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The technical expertise and advice of the Test Review committees regarding design, development, and reporting have also been especially valuable. These committees have representation from:

The Alberta Teachers' Association
The Conference of Alberta School Superintendents
The Universities Co-ordinating Council
The Public Colleges of Alberta
Alberta Education

The contribution of all of these groups is gratefully acknowledged.

George Bevan
Director
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STUDENT ACHIEVEMENT TESTING PROGRAM

Preface

Following each administration of the student achievement tests, a report of provincial results is prepared. This document is the report for the June 1986 administration. Each school and school jurisdiction also receives a report of test results for its students.

The Provincial Report consists of general information about the student achievement testing program, followed by information specific to each subject.

The Achievement Testing Program provides information significant at the provincial and local levels about student knowledge, understanding, and skills in relation to program objectives.

The achievement tests are specific to the program of studies prescribed by the Minister of Education. Curriculum specifications for each subject area, provided by the Curriculum Branch and the Language Services Branch of Alberta Education, identify the major content areas, the specific learning objectives within each area, and the emphasis that each objective is to receive. The test questions reflect these curriculum specifications.

The achievement tests, administered on a cyclical basis, are in four subject areas: language arts, social studies, mathematics, and science; and at three grade levels: 3, 6, and 9. In 1986, achievement tests were administered in Grade 3 Mathematics, Grade 6 Science, and Grade 9 English Language Arts.

Following the achievement test administration in June of each year, the results are reported to each school jurisdiction. These district profiles include results for each school and each student. Individual statements of results are not issued to students.

This provincial report is designed to assist school jurisdictions in interpreting their achievement test results.

Exemptions from the Achievement Testing Program

Under normal circumstances, the following students are exempt from achievement testing:

* Students participating in Special Educational programs
* Students in classes where the subject being tested has been cycled and taught in an alternate year
* Students in classes where the subject being tested has been taught in an alternate semester
* Students enrolled in English as a Second Language programs

General Description

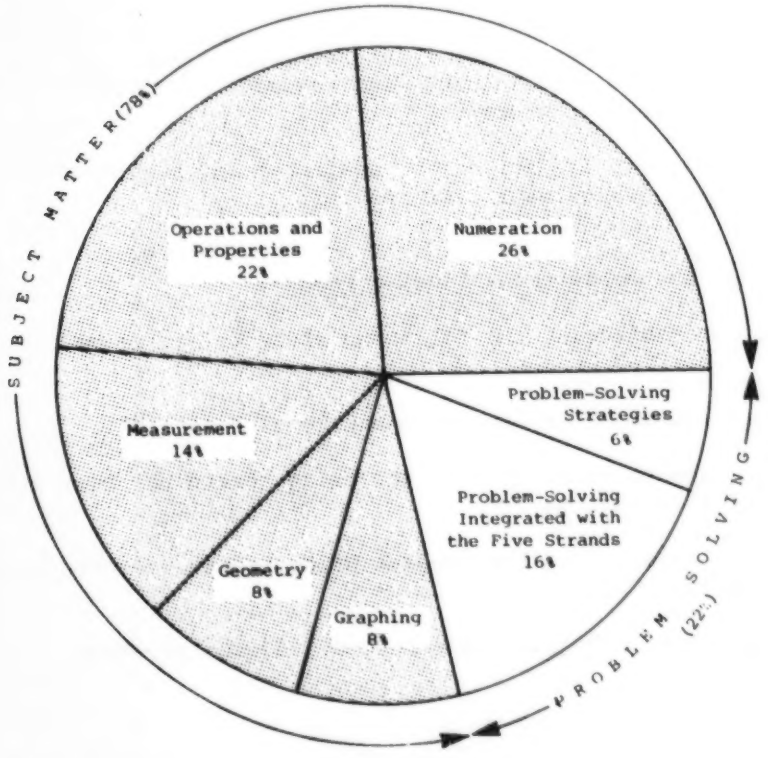
The test consists of two sections. Section 1 is divided into two parts: Part A consists of 25 questions covering numeration, geometry, and graphing; Part B consists of 25 questions covering operations and properties, measurement, and problem-solving strategies. Section 2 consists of four basic-fact tests in addition, subtraction, multiplication, and division. Each basic-fact test contains 32 questions.

Content of the Test

The four major components of the Grade 3 Mathematics curriculum and the emphasis that each is to receive according to the *Grade 3 Mathematics Curriculum Specifications* (revised, July 1984) form the basis for the achievement test. The scope of the Grade 3 Mathematics Achievement Test is limited to subject matter and problem-solving skills components. The psychomotor skills and attitudinal components will be reflected in the teacher's evaluation of the students.

Section 1: Subject Matter and Problem-Solving Skills

The subject matter component covers five strands: numeration, operations and properties, measurement, geometry, and graphing. The problem-solving skills component is divided into two parts: problem-solving integrated with subject matter and problem-solving strategies. The emphasis given to each subject matter strand and to each part of the problem-solving skills component is shown in the circle graph below.



The time allotted for writing each part of *Section 1* is 25 minutes.

Questions on subject matter measure student achievement at three cognitive levels: knowledge, comprehension, and application.

Blueprint for the Achievement Test

The blueprint for the Grade 3 Mathematics Achievement Test is presented in Table 1 below.

Table 1: Grade 3 Mathematics - Test Blueprint: Question Numbers and Per Cent Emphases

Content	Subject Matter by Cognitive Levels			Problem-Solving Skills	Test Emphases (%)
	Knowledge	Comprehension	Application		
Part A, *Section 1*					
Numeration	*1,5,8,12*	*2,3,4,6,9,10, 13,15*	*14*	*7,11*	30
Geometry	*16*	*17*	*18,20*	*19*	10
Graphing	*25*	*22*	*21,23*	*24*	10
Part B, *Section 1*					
Operations and Properties	*27,29,36, 38*	*26,28,31,34, 37*	*32,39*	*33,40*	26
Measurement	*47*	*41,42,45,46*	*48,50*	*43,49*	18
Problem-Solving Strategies	-	-	-	*30,35, 44*	6
Section 1 Emphases (%)	22	38	18	22	100

Section 2: Basic Facts

This section of the test consists of four timed tests. They measure student mastery of basic facts involving sums and minuends to 18, and products and dividends to 45.

The order of the basic-fact tests, the number of questions on each test, and the time allotted to write each test are presented below.

Basic-Fact Tests

Operations	No. of Questions	Time in Minutes
Addition	32	2
Subtraction	32	2
Multiplication	32	2
Division	32	2

Absentees and Exemptions

Table 2: Grade 3 Mathematics - Students Tested, Absentees, and Exemptions

	Number of Students	Per cent
Students tested	33 002	92.9
Students absent	1 135	3.2
Students exempt:		
Special Needs	492	1.4
Not taught subject this term	106	0.3
ESL Classes	168	0.5
Language of Instruction not English	589	1.7
Other (Approved by Director)	27	0.1
Total Exempt	1 382	3.9

Note: the data are incomplete, as not all schools returned absence and exemption reports.

RESULTS

Results for *Section 1* and *Section 2* are reported separately.

The report is based on the results for the 33 002 students from public, separate, and private schools. In computing provincial averages, the results from the one jurisdiction that used sampling were weighted to reflect the proportion of the students who were tested in that district.

Results for *Section 1* - Subject Matter and Problem-Solving Skills

Since over 31 000 of the students completed the test, it was concluded that sufficient time was allowed to write the test. Test statistics in percentage points are as follows:

Provincial Average - 72.3
Standard Deviation - 16.3

The KR-20 coefficient for the test was 0.8789.

Results for Total Test, Subject Matter, Cognitive Levels, and Problem Solving

The questions have been grouped according to reporting categories. Provincial averages for these reporting categories and for the total test were computed and rounded to one decimal. Consequently, the sum of the reporting category averages is not exactly the same as the average for the total test. Provincial averages for these reporting categories and the total test are presented in Table 3.

Table 3: Grade 3 Mathematics - Provincial Averages for Total Test, Subject Strands, Cognitive Levels, and Problem Solving

Reporting Category	Number of Questions	Average in Raw Score	Standard Deviation in Raw Score
Total Test	50	36.1	8.1
Subject Strand			
Numeration	15	11.2	2.8
Operations and Properties	13	9.4	2.6
Measurement	9	6.6	1.7
Geometry	5	3.5	1.3
Graphing	5	3.3	1.2
Problem-Solving Strategies	3	2.2	0.8
Cognitive Level			
Knowledge	11	9.0	1.8
Comprehension	19	13.6	3.6
Application	9	7.0	1.8
Problem-Solving Skills	11	6.4	2.3

Frequency Distribution of Raw Scores

Table 4 presents total raw scores as well as the relative frequency and the cumulative frequency for each raw score. The range of scores was from 0 to 50. Any relative frequency or any cumulative frequency smaller than 0.05 was rounded to 0.0. For example, 3 students or 0.01% obtained a score of 5, but the relative frequency for this score is recorded as 0.0.

Table 4: Grade 3 Mathematics - Frequency Distribution of Raw Scores

Score	Relative Frequency* (%)	Cumulative Frequency** (%)	Score	Relative Frequency* (%)	Cumulative Frequency** (%)
0	0.0	0.0	26	1.9	13.6
1	0.0	0.0	27	2.2	15.7
2	0.0	0.0	28	2.4	18.2
3	0.0	0.0	29	2.5	20.6
4	0.0	0.0	30	2.8	23.4
5	0.0	0.0	31	2.9	26.4
6	0.0	0.0	32	3.3	29.7
7	0.0	0.1	33	3.7	33.4
8	0.1	0.1	34	3.7	37.2
9	0.0	0.2	35	4.2	41.3
10	0.1	0.2	36	4.2	45.5
11	0.1	0.4	37	4.6	50.1
12	0.2	0.5	38	4.6	54.7
13	0.3	0.8	39	5.0	59.8
14	0.3	1.1	40	5.0	64.8
15	0.4	1.5	41	5.1	69.9
16	0.5	1.9	42	5.4	75.2
17	0.5	2.4	43	5.2	80.4
18	0.7	3.1	44	4.8	85.2
19	0.8	3.9	45	4.3	89.5
20	0.9	4.7	46	3.8	93.3
21	1.1	5.8	47	2.9	96.2
22	1.2	7.0	48	2.1	98.3
23	1.4	8.4	49	1.3	99.5
24	1.5	9.9	50	0.5	100.0
25	1.8	11.7			

*Relative frequency: the percentage of students who obtained each score.

**Cumulative frequency: the percentage of students who scored at or below each score.

Results for Individual Questions

The percentage of students choosing each response for each question is given in Table 5. The correct response for each question is also identified.

Table 5: Grade 3 Mathematics - Results for Individual Questions

Item	Key	Distribution of Responses* (%)				Item	Key	Distribution of Responses* (%)			
		A	B	C	D			A	B	C	D
1	B	10.6	75.6	8.2	4.6	26	D	16.2	14.7	16.0	52.2
2	D	6.0	25.1	7.4	60.6	27	B	3.0	88.9	1.6	4.9
3	B	16.7	75.8	5.4	1.6	28	D	3.9	5.9	7.2	81.8
4	D	5.3	6.6	6.3	81.5	29	C	3.4	4.2	88.4	2.8
5	D	0.9	1.5	1.5	95.1	30	A	78.6	14.7	1.5	4.6
6	C	0.6	6.0	84.9	7.5	31	D	6.3	7.8	16.6	67.7
7	B	11.9	33.5	46.6	7.3	32	B	14.7	61.0	15.1	7.5
8	C	3.4	5.5	81.3	8.9	33	A	38.5	56.1	2.6	0.9
9	C	4.9	8.2	79.2	6.8	34	C	8.2	2.8	76.9	11.0
10	B	16.6	74.3	5.4	3.1	35	B	2.9	92.5	2.1	1.9
11	C	8.1	3.7	63.3	23.4	36	C	6.5	7.3	71.4	11.7
12	B	2.5	87.0	1.8	7.6	37	D	5.6	5.6	5.4	81.2
13	B	11.0	74.0	6.9	6.5	38	B	13.0	76.2	5.6	2.0
14	D	6.9	1.6	2.8	87.1	39	B	5.4	79.8	12.5	0.8
15	C	28.0	1.3	67.3	2.3	40	C	7.3	3.3	73.0	15.0
16	D	11.9	8.2	5.0	73.8	41	A	79.9	4.4	11.2	1.9
17	A	77.8	6.6	2.9	11.7	42	C	1.7	4.6	84.0	8.5
18	A	72.8	9.2	4.4	11.4	43	A	55.1	22.1	8.0	13.5
19	C	27.5	6.3	48.2	15.5	44	B	16.1	43.9	27.6	10.4
20	D	3.8	8.7	10.6	75.3	45	A	45.3	5.6	37.5	9.9
21	A	74.6	13.3	3.2	7.3	46	B	7.3	75.5	7.5	7.7
22	A	44.8	14.3	34.4	4.5	47	C	0.5	0.9	95.6	0.7
23	A	93.6	1.7	1.3	1.4	48	D	0.7	1.1	2.6	93.4
24	B	36.5	50.5	4.2	6.4	49	C	20.5	6.5	66.2	3.5
25	D	18.5	3.6	4.0	71.3	50	A	63.7	3.1	11.7	17.5

*The sum of the percentages for each question may be less than 100% because the No Response category is not included. This category is less than 4% for any one of these questions.

Distribution of Jurisdiction Levels of Achievement

Table 6 indicates the percentage of jurisdictions classified as significantly above or below the provincial average for each reporting category.

Table 6: Grade 3 Mathematics - Distribution of Jurisdiction Levels of Achievement

Reporting Category	Distribution of Jurisdictions		
	Below Provincial Average (%)	Not Different from Provincial Average (%)	Above Provincial Average (%)
Total Test	23.4	46.8	29.9
Subject Matter			
Numeration	25.6	53.3	21.1
Operations and Properties	19.8	53.3	26.9
Measurement	14.0	63.3	22.7
Geometry	26.0	52.5	21.5
Graphing	17.6	55.4	27.0
Problem-Solving Strategies	14.1	76.4	9.5
Cognitive Level			
Knowledge	24.4	43.1	32.4
Comprehension	25.8	45.4	28.8
Application	14.9	60.1	25.0
Problem-Solving Skills	16.2	62.3	21.5

Results for Section 2 - Basic Facts

This section of the test measures student mastery of basic facts; that is, it measures student speed and accuracy.

Results for Speed and Accuracy

Table 7 below presents the results in terms of the number of questions the students could answer correctly in 2 minutes, and in terms of the number of questions the students attempted in 2 minutes.

Table 7: Grade 3 Mathematics - Speed and Accuracy for Basic Facts

Operations	Number of Questions on the test	Time Allotted (min)	Average Number of Questions Answered Correctly	Average Numbers of Questions Attempted
Addition	32	2	25.8	26.3
Subtraction	32	2	23.0	24.3
Multiplication	32	2	20.1	22.0
Division	32	2	16.1	19.9

Frequency Distribution of Basic-Fact Scores

Table 8 presents total raw scores as well as their relative frequencies for each of the basic-fact tests. Any relative frequency smaller than 0.05 was rounded to 0.0. For example, 11 students or 0.03% obtained a score of 3 on addition, but the relative frequency for this score is recorded as 0.0.

Table 8: Grade 3 Mathematics - Frequency Distribution of Basic-Fact Raw Scores

Score	Relative Frequency*			
	Addition	Subtraction	Multiplication	Division
0	0.1	0.2	0.3	1.5
1	0.0	0.1	0.1	1.5
2	0.0	0.2	0.3	1.6
3	0.0	0.2	0.4	1.8
4	0.0	0.3	0.5	2.2
5	0.1	0.4	0.7	2.7
6	0.1	0.5	1.1	3.2
7	0.2	0.8	1.5	3.4
8	0.2	1.0	2.1	3.7
9	0.3	1.3	2.6	4.1
10	0.3	1.3	3.2	4.5
11	0.5	1.5	3.8	4.4
12	0.6	1.9	4.0	4.4
13	0.9	2.1	3.8	4.1
14	1.3	2.4	4.6	4.4
15	1.5	3.1	4.5	4.2
16	2.4	3.5	4.9	3.9
17	2.3	4.2	3.7	3.4
18	2.5	4.2	3.7	3.5
19	2.6	4.2	3.8	3.2
20	4.0	4.3	3.9	3.0
21	3.9	4.1	3.5	2.8
22	3.9	4.1	3.5	2.5
23	4.6	3.9	3.1	2.4
24	5.2	3.4	2.7	2.1
25	5.1	3.5	2.5	2.0
26	4.2	3.3	2.3	1.9
27	5.0	3.5	2.6	1.9
28	4.9	3.7	2.8	1.9
29	4.9	3.9	3.2	2.1
30	5.7	5.0	3.9	2.5
31	8.9	8.0	5.9	3.7
32	23.5	16.0	10.4	5.2

*Relative frequency: the percentage of students who obtained each score.

GRADE 6 SCIENCE ACHIEVEMENT TEST

General Description

The time allotted for writing the Grade 6 Science Achievement Test is one hour.

The test consists of 60 multiple-choice questions which are answered on machine-scored answer sheets.

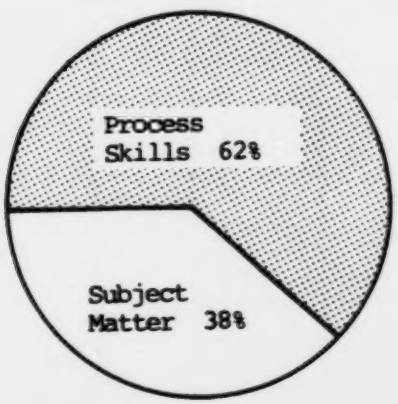
Content of the Test

The four major components of the Division II Science curriculum and the emphasis that each is to receive according to the *Grade 6 Science Curriculum Specifications* (Revised, August 1984) form the basis for the achievement test. These are:

Component	Emphasis (%)
Process Skills	50
Subject Matter	30
Psychomotor Skills	10
Attitudes	10

The scope of the Grade 6 Science Achievement Test is limited to those objectives that may be efficiently measured on a paper and pencil test. While some questions on the test may reflect the psychomotor skills component, basically it is the process skills and subject matter components of the curriculum that are tested. The psychomotor skills and attitudinal components will be reflected in the teacher's evaluation of students.

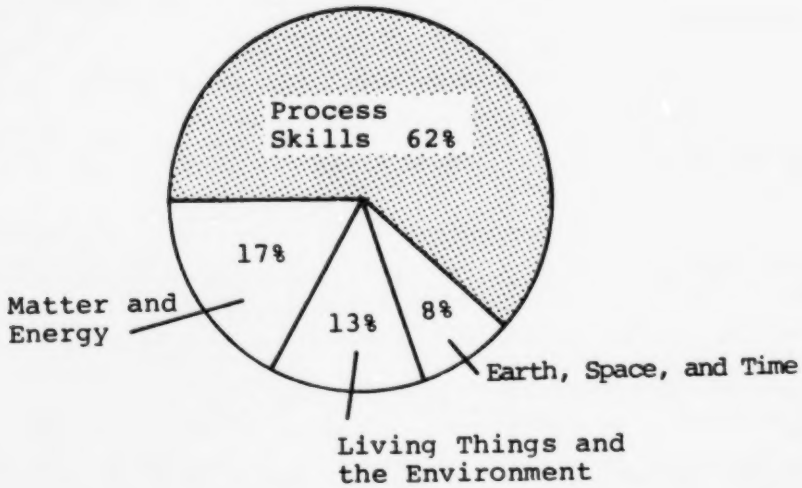
The emphasis given to the process skills and subject matter components is shown in the circle graph below.



The subject matter component includes questions from each theme in the Division II Science core. These themes are listed below.

1. Matter and Energy
2. Living Things and the Environment
3. Earth, Space, and Time

The emphasis given to each theme and to the process skills is shown in the circle graph below.



The test questions represent the cognitive levels of knowledge, application, and understanding.

Approximately 25% of the questions test knowledge of subject matter.

Approximately 75% of the questions test application and understanding.

It is assumed that students are familiar with the terminology used in the curriculum specifications (e.g. inference, operational definition, variables, hypothesis, closed circuit, changes in composition, etc.).

The Grade 6 Science Achievement Test is based on the Division II Curriculum Specifications and includes material covered in grades 4, 5, and 6.

Blueprint for the Achievement Test

The blueprint for the Grade 6 Science Achievement Test is presented in Table 9 below.

Table 9: Grade 6 Science - Test Blueprint: Question Numbers and Per Cent Emphases

Content	Questions by Cognitive Level		Test Emphases (%)
	Knowledge	Application	
Matter and Energy	*39,40,43,46*	*38,41,42,44, 45,47*	17
Living Things and the Environment	*48,51,52*	*49,50,53,54, 55*	13
Earth, Space, and Time	*57*	*56,58,59,60*	8
Process Skills	-	*1 to 37*	62
Test Emphases in Per Cent	14	86	100

Absentees and Exemptions

Table 10: Grade 6 Science - Students Tested, Absentees, and Exemptions

	Number of Students	Per cent
Students tested	30 513	93.7
Students absent	1 110	3.4
Students exempt:		
Special Needs	488	1.5
Not taught subject this term	115	0.4
ESL Classes	156	0.5
Language of Instruction not English	168	0.5
Other (Approved by Director)	21	0.1
Total Exempt	948	2.9

Note: the data are incomplete, as not all schools returned absence and exemption reports.

RESULTS

The report is based on the results for the 30 513 students from public, separate, and private schools.

Total Test

Since over 29 000 of the students completed the test, it was concluded that sufficient time was allowed to write the test. Test statistics in percentage points are as follows:

Provincial Average - 66.4
Standard Deviation - 17.2

The KR-20 coefficient for the test was 0.8933.

Reporting Categories

The questions have been grouped according to reporting categories. Provincial averages for these categories and for the total test were computed and rounded to one decimal. Consequently, the sum of the averages is not exactly the same as the average for the total test. Provincial averages for these reporting categories and the total test are presented in Table 11 below.

Table 11: Grade 6 Science - Provincial Averages for Total Test, Process Skills, and Subject Matter

Reporting Category	Number of Questions	Average in Raw Score	Standard Deviation in Raw Score
Total Test	60	39.9	10.3
Subject Matter			
Matter and Energy	10	6.5	2.2
Living Things and the Environment	8	5.2	1.9
Earth, Space, and Time	5	3.1	1.4
Process Skills	37	25.1	6.6
Cognitive Level			
Knowledge	8	5.3	1.8
Application	52	34.5	9.0

Frequency Distribution of Raw Scores

Table 12 presents total raw scores as well as the relative frequency and the cumulative frequency for each raw score. The range of scores was from 4 to 60. Any relative frequency or any cumulative frequency smaller than 0.05 was rounded to 0.0. For example, 9 students or 0.03% obtained a score of 10, but the relative frequency for this score is recorded as 0.0.

Table 12: Grade 6 Science - Frequency Distribution of Raw Scores

Score	Relative Frequency* (%)	Cumulative Frequency** (%)	Score	Relative Frequency* (%)	Cumulative Frequency** (%)
0	0.0	0.0	31	2.5	22.6
1	0.0	0.0	32	2.5	25.0
2	0.0	0.0	33	2.8	27.8
3	0.0	0.0	34	2.9	30.7
4	0.0	0.0	35	2.9	33.5
5	0.0	0.0	36	3.0	36.6
6	0.0	0.0	37	3.1	39.6
7	0.0	0.0	38	3.1	42.8
8	0.0	0.0	39	3.2	46.0
9	0.0	0.0	40	3.3	49.3
10	0.0	0.1	41	3.3	52.6
11	0.1	0.1	42	3.5	56.1
12	0.1	0.3	43	3.4	59.4
13	0.1	0.4	44	3.6	63.0
14	0.2	0.6	45	3.3	66.3
15	0.3	0.9	46	3.3	69.6
16	0.4	1.3	47	3.6	73.3
17	0.5	1.8	48	3.2	76.5
18	0.6	2.4	49	3.2	79.6
19	0.7	3.1	50	3.3	82.9
20	0.9	4.0	51	3.1	86.0
21	0.9	4.9	52	2.9	88.9
22	1.0	5.9	53	2.6	91.5
23	1.2	7.2	54	2.3	93.8
24	1.3	8.5	55	1.9	95.7
25	1.6	10.1	56	1.6	97.3
26	1.7	11.8	57	1.2	98.5
27	1.8	13.6	58	0.9	99.3
28	2.0	15.6	59	0.5	99.8
29	2.2	17.8	60	0.2	100.0
30	2.2	20.1			

*Relative frequency: the percentage of students who obtained each score.

**Cumulative frequency: the percentage of students who scored at or below each score.

Results for Individual Questions

The percentage of students choosing each response is given in Table 13. The correct response for each question is also identified.

Table 13: Grade 6 Science - Results for Individual Questions

Item	Key	Distribution of Responses* (%)				Item	Key	Distribution of Responses* (%)			
		A	B	C	D			A	B	C	D
1	C	7.7	5.4	82.9	4.0	31	C	3.4	6.4	79.5	10.5
2	B	11.1	42.7	40.9	5.1	32	D	26.7	7.5	13.7	51.9
3	D	2.5	3.8	9.7	83.9	33	D	7.9	16.4	11.8	63.7
4	C	14.1	5.6	73.0	7.2	34	B	13.1	71.3	9.1	6.3
5	D	13.6	7.5	5.6	73.0	35	B	8.6	72.0	11.6	7.6
6	A	67.1	2.2	15.8	14.8	36	C	19.7	11.3	56.9	11.5
7	A	43.9	19.8	8.8	27.3	37	C	10.7	9.5	61.8	17.6
8	A	70.7	6.5	17.0	5.8	38	B	9.8	57.0	19.2	13.6
9	D	5.8	7.6	12.0	74.6	39	B	3.6	74.4	4.3	17.4
10	D	9.1	7.4	2.9	80.6	40	A	60.7	6.1	16.6	16.2
11	B	2.6	65.4	6.7	25.1	41	A	76.1	7.5	4.5	11.4
12	B	11.9	69.2	15.4	3.4	42	D	21.7	9.1	13.1	55.3
13	A	88.7	6.4	3.7	1.1	43	B	8.5	74.8	11.8	4.4
14	A	53.5	9.5	15.6	21.3	44	D	4.1	5.0	14.4	75.9
15	B	14.2	70.6	8.7	6.4	45	D	11.8	21.7	12.5	53.2
16	A	66.4	12.9	4.1	16.6	46	B	5.0	59.8	29.1	5.2
17	C	19.3	3.1	73.7	3.9	47	D	9.7	9.6	19.6	60.1
18	C	7.0	24.5	63.2	5.2	48	C	10.3	10.4	68.6	9.6
19	B	13.0	67.6	7.1	12.0	49	C	7.3	10.4	69.1	12.2
20	A	58.5	18.6	7.8	15.0	50	C	8.7	22.6	55.8	11.8
21	C	8.8	4.6	80.7	5.7	51	B	7.8	62.5	13.8	14.6
22	A	58.0	17.0	13.4	11.4	52	B	7.2	70.3	9.7	11.3
23	A	46.0	18.8	18.1	17.0	53	A	49.5	31.1	7.7	10.1
24	A	75.3	5.4	5.0	14.1	54	D	11.0	5.8	5.2	76.2
25	D	2.4	6.4	4.7	86.4	55	B	5.7	68.4	8.4	15.7
26	C	21.9	4.5	57.1	16.4	56	C	9.6	11.3	69.0	7.9
27	D	17.2	18.5	10.0	54.2	57	D	10.9	18.4	6.6	61.8
28	D	2.5	6.8	6.4	84.1	58	B	14.8	52.7	24.8	5.1
29	C	7.0	6.0	78.6	8.3	59	C	15.9	14.0	53.8	13.6
30	B	7.1	62.9	14.5	15.3	60	A	70.8	6.1	9.2	11.3

*The sum of the percentages for each question may be less than 100% because the No Response category is not included. The No Response category does not exceed 2.7% for any one of these questions.

Distribution of Jurisdiction Levels of Achievement

Table 14 indicates the percentage of jurisdictions classified as significantly above or below the provincial average for each subtest.

Table 14: Grade 6 Science - Distribution of Jurisdiction Levels of Achievement

Reporting Category	Distribution of Jurisdictions		
	Below Provincial Average (%)	Not Different from Provincial Average (%)	Above Provincial Average (%)
Total Test	15.6	61.6	22.7
Subject Matter			
Matter and Energy	12.5	64.9	22.6
Living Things and the Environment	10.4	69.2	20.4
Earth, Space, and Time	16.2	58.8	25.0
Process Skills	14.7	62.6	22.7
Cognitive Level			
Knowledge	13.3	60.5	26.2
Application	15.2	62.1	22.7

GRADE 9 ENGLISH LANGUAGE ARTS ACHIEVEMENT TEST

General Description

The Grade 9 English Language Arts Achievement Test is a two-part test. Part A: Composition requires the student to write a composition that provides information addressed to a specified audience. This information can be drawn from four reading selections provided or from the student's own experience and reading. Students are given two hours to write Part A: Composition.

Part B: Reading (Multiple Choice) consists of 64 questions linked to brief reading selections.* Included in Part B are 10 questions from the Minister's Advisory Committee on Student Achievement (MACOSA) Test (1978), and one question linked to a cartoon.

Content of the Test

The five major components of the Grade 9 English Language Arts curriculum and the emphasis that each is to receive according to the Grade 9 English Language Arts Curriculum Specifications (revised January 1981) form the basis for the achievement test.

The scope of the Grade 9 English Language Arts Achievement Test is limited to the writing and reading components of the curriculum. The components of viewing, listening, and speaking are reflected in teachers' evaluations of students.

Part A: Composition

To provide meaningful information about student writing, students' responses are examined in terms of writing components used as reporting categories. Components evaluated are: Content -- selecting information appropriate to the purpose; Development -- organizing details into a coherent whole; Sentence Structure -- using varied sentence type, length, and structure for effects such as emphasis; Vocabulary -- selecting and using appropriate words and expressions; Conventions -- using the appropriate conventions of writing (i.e., spelling, grammar, punctuation and capitalization).

The blueprint for Part A: Composition is presented in Table 15.

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*Question 18 was omitted from the Grade 9 English Language Arts Achievement Test.

Table 15: Grade 9 English Language Arts -
Part A: Composition
Blueprint

REPORTING CATEGORY (Scoring Guide)	DESCRIPTION OF WRITING ASSIGNMENT	RANGE OF MARKS
CONTENT (Selecting Information and Ideas to Fulfil a Purpose) The student should be able to select information from source material and adapt that information appropriately for a specified audience. The student should be able to support general ideas with specific illustrations and examples. DEVELOPMENT (Organizing Details into a Coherent Whole) The student should be able to organize information effectively and coherently to produce a unified composition that fulfils the student's purpose for writing. SENTENCE STRUCTURE (Structuring Sentences Effectively) The student should be able to use a variety of sentence types and structures to achieve clarity, interest, and emphasis. VOCABULARY (Using Effective Words and Expressions) The student should be able to use words and expressions appropriately and effectively to communicate to the specified audience and to accomplish the student's purpose. CONVENTIONS (Following the Conventions of Written Language) The student should be able to communicate clearly by adhering to generally acceptable spelling, grammar, and punctuation.	The writing assignment is a composition related to information drawn from source material in the test booklet. Also, students are encouraged to use information from their own experience and/or reading. The assignment establishes a purpose and an audience for the composition but allows the student choice in selection of detail, structure, diction, and tone.	5 - Exceptional 4 - Proficient 3 - Satisfactory 2 - Limited 1 - Poor Ins - Insufficient

Part B: Reading (Multiple Choice)

Part B consists of 54 questions based on eight reading selections and a cartoon, and 10 questions re-administered from the Minister's Advisory Committee on Student Achievement (MACOSA) Test (1978). Information on the numbers and types of reading selections in Part B follows in Table 16.

Table 16: Grade 9 English Language Arts - Distribution of Reading Selection Types

Reading Selection Type	Number of Selections	Number of Questions
MACOSA Questions	-	10
Fiction	2	14
Non-fiction	3	20
Poetry	3	19
Cartoon	1	1
Total	9	64

Reporting Categories for Part B: Reading (Multiple Choice)

Questions are grouped into five reporting categories or subtests: Main Idea (10 questions), Supporting Details (11 questions), Vocabulary and Figurative Language (14 questions), Organization of Events and Ideas (13 questions), and Conclusions (16 questions). Each reporting category requires a minimum of six questions so that reliable results can be obtained. The reporting categories used in Part B are given in the blueprint for Part B: Reading (Multiple Choice) presented in Table 17.

Cognitive Levels for Part B: Reading (Multiple Choice)

A further design consideration affecting the development of Part B is that of cognitive level. Questions are classified according to three cognitive levels: Literal Understanding (6 questions), Inferential Understanding (34 questions), and Evaluation (24 questions). By considering cognitive level when developing a test, the Student Evaluation Branch attempts to ensure that a variety of mental activities will be used by students as they write the test. Questions listed under Literal Understanding are expected to be answered using skills of recall and recognition; those listed under Inferential Understanding are expected to elicit skills of analysis, interpretation, and extrapolation; and questions listed under Evaluation are expected to draw forth judgmental skills.

The classification of the questions for each reporting category for each cognitive level is shown in the blueprint for Part B: Reading (Multiple Choice) presented in Table 17.

Table 17: Grade 9 English Language Arts -
Part B: Reading (Multiple Choice) Blueprint

REPORTING CATEGORY	CURRICULUM SPECIFICATION REFERENCE**	COGNITIVE LEVEL			NO. OF QUESTIONS	% OF TEST
		LITERAL UNDERSTANDING	INFERENTIAL UNDERSTANDING	EVALUATION		
1. Main Idea Students should be able to infer the main idea and the author's purpose in a reading selection. They should be able to judge the main idea and author's purpose.	I B(10) III A(1) (4) (2) (3)	-	(3) 45,52,62	(7) 6,12,19,34, 41,53,60	10	15.6%
2. Supporting Details Students should be able to recognize supporting details, particularly character traits. They should be able to infer details and character traits suggested by actions or by speech.	I A(2) (10) II B(2) (7) C(1) (3) III C(3)	(2) 16,49	(8) 10,25,27,32, 39,48,55,63	(1) 64	11	17.2%
3. Vocabulary and Figurative Language Students should be able to infer word meaning from context. They should be able to interpret figurative language and judge the purpose and effect of word choice and figures of speech.	I A(3) (11) C(2) III A(3) B(1) (2)	(3) 1,56,57	(4) 20,28,31,36	(7) 3,7,9,21, 29,43,44	14	21.9%
4. Organization of Events and Ideas Students should be able to understand the contributions made to a reading selection of various organizational patterns and devices such as cause and effect, setting, chronological order, comparison and contrast, and point of view.	I A(13) B(5) (8) (10) III B(3) (4)	(1) 2	(10) 5,8,13,14, 33,37,42,47, 54,59	(2) 15,51	13	20.3%
5. Conclusions Students should be able to draw appropriate conclusions from details and ideas found in reading selections and judge the acceptability of conclusions that might be drawn.	I D(1) E(1) (2) III A(2) (4) C(3)	-	(9) 22,23,24,26, 30,35,50,58, 65	(7) 4,11,17,38, 40,46,61	16	25.0%
NO. OF QUESTIONS % of TEST		6 9.4%	34 53.1%	24 37.5%	64	100.0%

* Selections used were fiction, non-fiction, and poetry. Visual material was also used.
**Grade 9 Language Arts Curriculum Specifications (Revised 1982)

Absentees and Exemptions

Table 18: Grade 9 English Language Arts - Students Tested, Absentees, and Exemptions

	Number of Students	Per cent
Students tested	29 838	92.9
Students absent	1 272	4.0
Students exempt	1 000	3.1
Special needs	723	2.3
Not taught subject this term	115	0.4
ESL classes	137	0.4
Language of Instruction not English	0	0.0
Other (Approved by Director)	25	0.1

Note: the data are incomplete, as not all schools returned absence and exemption reports.

RESULTS

The report is based on the results for 29 838 Grade 9 students. The provincial average score for Parts A and B combined (each worth 50%) was 64.0% and the standard deviation[1] was 14.5%.

Table 19: Grade 9 English Language Arts - Frequency Distribution of Raw Scores

Score	Relative Frequency (%)*	Cumulative frequency (%)**	Score	Relative Frequency (%)*	Cumulative Frequency (%)**	Score	Relative Frequency (%)*	Cumulative Frequency (%)**
0	0.0	0.0	34	0.3	2.7	68	3.2	61.1
1	0.0	0.0	35	0.3	3.1	69	2.4	63.5
2	0.0	0.0	36	0.4	3.5	70	2.8	66.3
3	0.0	0.0	37	0.4	3.9	71	2.1	68.4
4	0.0	0.0	38	0.4	4.3	72	2.5	70.9
5	-	-	39	0.6	5.0	73	2.1	73.0
6	-	-	40	0.7	5.6	74	2.8	75.8
7	-	-	41	0.6	6.3	75	1.9	77.7
8	-	-	42	0.8	7.1	76	2.1	79.7
9	-	-	43	1.0	8.1	77	1.8	81.6
10	-	-	44	1.0	9.1	78	2.0	83.6
11	-	-	45	1.1	10.2	79	1.7	85.3
12	-	0.1	46	1.4	11.6	80	1.6	86.8
13	-	0.1	47	1.3	12.9	81	1.4	88.3
14	-	0.2	48	1.4	14.2	82	1.4	89.7
15	-	0.2	49	1.6	15.8	83	1.2	90.9
16	0.1	0.2	50	1.6	17.4	84	1.1	92.0
17	0.1	0.3	51	1.8	19.2	85	1.2	93.2
18	-	0.3	52	1.7	20.9	86	1.0	94.2
19	0.1	0.4	53	2.1	23.0	87	1.1	95.2
20	0.1	0.5	54	2.0	25.0	88	0.8	96.0
21	0.1	0.5	55	2.2	27.3	89	0.8	96.9
22	-	0.5	56	2.4	29.6	90	0.6	97.4
23	0.1	0.7	57	2.4	32.0	91	0.9	98.3
24	0.1	0.8	58	2.5	34.5	92	0.4	98.7
25	0.1	0.9	59	2.4	36.9	93	0.5	99.2
26	0.2	1.0	60	2.8	39.7	94	0.3	99.4
27	0.2	1.2	61	2.3	42.0	95	0.3	99.8
28	0.1	1.3	62	2.9	45.0	96	0.1	99.9
29	0.2	1.5	63	2.5	47.4	97	0.1	100.0
30	0.2	1.7	64	3.1	50.5	98	-	100.0
31	0.2	1.9	65	2.2	52.7	99	0.0	100.0
32	0.3	2.2	66	2.9	55.7	100	0.0	100.0
33	0.3	2.4	67	2.3	58.0			

*Relative Frequency: the percentage of students achieving each score.
**Cumulative Frequency: the percentage of students achieving at, or below, each score.

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[1]A measure of the variability of scores. In a normal distribution 68% of the students' scores would fall within one standard deviation of the average.

The total test score was obtained by combining the scores for Part A: Composition and Part B: Reading (Multiple Choice) so that each part had a weighting of 50%.

Any score that was achieved by fewer than 0.05% of the population is represented by a dash (-). It should be noted, therefore, that the range of student scores was from 5 to 98, although the relative frequency at the lower end of the distribution does not appear to indicate this. One (1) student achieved a raw score of 5 but, since this represents fewer than 0.05% of the population, the relative frequency is shown by a dash (-).

Results for Part A: Composition

Table 20 shows the percentage distribution of scores by reporting category for Part A.

Table 20: Grade 9 English Language Arts - Part A: Composition
Percentage Distribution of Scores by Reporting Category

Score	Reporting Category				
	Content	Development	Sentence Structure	Vocabulary	Conventions
5 (Exceptional)	9.3	10.4	9.4	8.3	16.6
4 (Proficient)	25.8	26.3	25.3	23.6	32.3
3 (Satisfactory)	38.4	38.0	45.5	55.1	32.7
2 (Limited)	20.5	19.2	15.5	10.2	13.6
1 (Poor)	5.1	5.2	3.4	1.8	3.9
Ins (Insufficient)	0.9	0.9	0.9	0.9	0.9

Although the papers were scored on a one-marker system, 1 105 papers were recirculated so that a second set of scores was available for these papers to confirm scoring consistency. Of the scores awarded to the 1 105 papers as a second reading, 86.55% remained identical to the original score or varied by only one point on each of the five scoring scales. It is important to note, however, that the one-marker system produces results that are reliable for groups of 25 or more students. Results are not necessarily reliable for the individual student.

Results for Part B: Reading (Multiple Choice)

The average score on Part B: Reading (Multiple Choice) was 40.7/64 (63.6%).

Tables 21 to 25 give details about scores according to reporting category, cognitive level, frequency distribution, performance on the questions from the Minister's Advisory Committee on Student Achievement (MACOSA) Test, 1978 and 1986, and frequency of response question by question.

Table 21: Grade 9 English Language Arts - Results for Part B: Reading (Multiple Choice) By Reporting Category

Reporting Category	Number of Questions	Raw Score Mean	Standard Deviation
1. Main Idea	10	6.1	2.1
2. Supporting Detail	11	6.9	2.2
3. Vocabulary and Figurative Language	14	8.6	2.6
4. Organization of Events and Ideas	13	8.8	2.3
5. Conclusions	16	10.3	3.1
Total Test	64	40.7	10.1

For Main Idea, the average score was 6.1/10 (61.0%); for Supporting Details, the average score was 6.9/11 (62.7%); for Vocabulary and Figurative Language, the average score was 8.6/14 (61.4%); for Organization of Events and Ideas, the average score was 8.8/13 (67.7%); and for Conclusions, the average score was 10.3/16 (64.4%).

Although performance in the different reporting categories appears to show some variation, caution is advised in comparing these results. The sets of questions that make up each reporting category were not selected to be equal in average level of difficulty; therefore, differences may be due to variations in question difficulty rather than in student performance. The averages can be used, however, in combination with jurisdictional results to detect patterns of relative strength or weakness in achievement in each of the reporting categories.

Table 22 shows raw scores for Part B: Reading (Multiple Choice) by cognitive level.

Table 22: Grade 9 English Language Arts - Results for Part B: Reading (Multiple Choice) By Cognitive Level

Cognitive Level	Number of Questions	Raw Score Mean	Standard Deviation
Literal Understanding	6	3.9	1.4
Inferential Understanding	34	21.9	5.5
Evaluation	24	14.9	4.2
Total Test	64	40.7	10.1

For Literal Understanding, students scored an average of 3.9/6 (65.0%); for Inferential Understanding, students scored an average of 21.9/34 (64.4%); and for Evaluation, students scored an average of 14.9/24 (62.1%).

Because questions within each cognitive level vary in difficulty, and because the average difficulty of the questions in one cognitive level is not necessarily the same as the average difficulty of questions in another cognitive level, no conclusions can be drawn about students' performance on one cognitive level compared to performance on another.

Table 23 shows the frequency distribution of scores on Part B.

Table 23: Grade 9 English Language Arts - Part B: Reading (Multiple Choice)
Frequency Distribution of Scores

Score	Relative Frequency in %*	Cumulative Frequency in %**	Score	Relative Frequency in %*	Cumulative Frequency in %**
1	-	-	33	2.6	24.6
2	0.0	-	34	2.6	27.3
3	-	-	35	2.9	30.2
4	0.0	-	36	2.8	33.0
5	0.0	-	37	2.8	35.8
6	-	-	38	3.1	38.9
7	-	-	39	3.3	42.2
8	-	-	40	3.3	45.5
9	-	-	41	3.5	49.0
10	-	-	42	3.6	52.6
11	0.1	0.1	43	3.5	56.2
12	0.1	0.2	44	3.8	60.0
13	0.1	0.3	45	3.6	63.6
14	0.2	0.5	46	4.0	67.6
15	0.2	0.7	47	3.8	71.4
16	0.4	1.0	48	3.7	75.0
17	0.4	1.4	49	3.5	78.6
18	0.5	1.9	50	3.5	82.0
19	0.6	2.5	51	3.3	85.4
20	0.6	3.2	52	3.1	88.4
21	1.0	4.1	53	2.7	91.1
22	1.0	5.2	54	2.4	93.5
23	1.0	6.1	55	2.0	95.5
24	1.1	7.3	56	1.4	97.0
25	1.4	8.6	57	1.1	98.1
26	1.5	10.1	58	0.9	99.0
27	1.7	11.9	59	0.5	99.6
28	1.7	13.6	60	0.2	99.8
29	1.9	15.4	61	0.1	99.9
30	2.1	17.5	62	0.1	100.0
31	2.3	19.8	63	-	100.0
32	2.2	22.1	64	-	100.0

*Relative Frequency: the percentage of students achieving each score.
**Cumulative Frequency: the percentage of students achieving at, or below, each score.

Any score that was achieved by fewer than 0.05% of the population is represented by a dash (-). It should be noted, therefore, that the range of student scores was from 1 to 64, although the relative frequencies at the upper and lower ends of the distribution do not appear to indicate this. One (1) student achieved a raw score of 64 but, since this represents fewer than 0.05% of the population, the relative frequency is shown by a dash (-).

Table 24 compares the percentages of students choosing correct answers for the 10 MACOSA questions in 1978 and in 1986.

Table 24: Grade 9 English Language Arts - Comparison of Performance on MACOSA Questions Part B: Reading (Multiple Choice)

Question Number	1978 Percentage of Students Choosing Correct Answers	1986 Percentage of Students Choosing Correct Answers
56	66.3	68.9
57	68.0	78.3
58	54.0	50.1
59	78.8	87.6
60	52.2	63.3
61	76.5	75.7
62	67.3	68.1
63	53.3	57.9
64	56.8	60.2
65	75.4	71.1
	Average = 64.9	Average = 68.1
	Number of Students = 1 494	Number of Students = 29 838

The differences in the percentages of students choosing correct answers on the 10 MACOSA questions are statistically significant at the .001 level. A greater percentage of students chose correct answers in 1986 than in 1978.

Table 25 shows question response frequencies for all 64 questions appearing in Part B: Reading (Multiple Choice).

Table 25: Grade 9 English Language Arts - Question Response Frequencies

Question Number	Key	Distribution of Responses (%)* A	B	C	D
1	D	8.8	18.8	29.3	43.0
2	B	18.6	53.0	24.9	3.4
3	A	64.0	6.9	14.4	14.6
4	B	6.3	82.8	6.3	4.6
5	C	2.1	5.2	87.3	5.3
6	D	5.8	1.7	22.5	70.0
7	D	4.0	0.7	11.0	84.2
8	B	3.3	74.3	4.8	17.5
9	D	10.7	37.8	24.2	27.2
10	D	8.8	3.5	16.6	71.1
11	B	19.7	41.6	22.2	16.4
12	C	5.3	11.6	72.0	11.0
13	A	83.7	5.7	5.2	5.1
14	B	2.5	82.6	2.6	12.2
15	A	46.8	17.4	18.4	17.3
16	B	8.7	71.4	16.0	3.8
17	C	10.9	5.9	75.3	7.8
18	QUESTION OMITTED				
19	C	20.4	5.8	59.8	14.0
20	A	75.7	6.5	9.5	8.2
21	B	3.9	72.6	16.3	7.2
22	B	4.2	64.4	24.2	7.1
23	A	77.7	8.1	5.0	9.1
24	B	25.0	58.9	7.0	9.1
25	C	22.8	3.8	62.3	11.0
26	A	56.9	7.7	23.2	12.1
27	C	8.6	43.3	36.4	11.4
28	A	67.4	9.7	19.9	2.9
29	B	5.3	58.3	24.9	11.5
30	D	16.2	9.6	3.4	70.6
31	C	18.4	18.6	45.8	17.1
32	D	5.7	10.4	11.6	72.2
33	B	19.2	51.3	4.0	25.4
34	C	17.7	19.8	48.0	14.4
35	D	7.0	10.2	32.4	50.2
36	C	10.4	13.5	63.7	12.2
37	A	39.2	23.5	24.6	12.6
38	D	15.3	10.6	12.9	61.1
39	A	58.0	24.6	9.6	7.6
40	D	8.8	11.5	9.7	69.8
41	D	18.5	9.3	7.7	64.3
42	C	9.5	12.6	68.3	9.5
43	C	8.3	13.6	65.4	12.7
44	A	45.8	18.0	11.9	24.3
45	A	50.2	14.4	27.5	7.8
46	C	14.3	12.7	64.1	8.8
47	B	9.0	79.3	6.6	5.0
48	D	9.2	10.4	20.7	59.5
49	C	4.8	13.3	73.7	8.0
50	C	4.9	14.6	57.8	22.6
51	A	51.0	11.7	10.4	26.7
52	B	17.4	50.6	15.8	15.8
53	A	62.2	11.4	17.3	8.8
54	D	7.2	7.4	9.4	75.7
55	B	4.7	65.6	6.8	22.6
56	A	68.9	14.6	11.1	5.0
57	D	7.3	10.4	3.6	78.3
58	C	10.5	22.5	50.1	16.5
59	D	4.4	2.2	5.4	87.6
60	C	20.0	12.5	63.3	3.8
61	B	3.5	75.7	13.7	6.7
62	D	10.3	14.9	6.2	68.1
63	A	57.9	32.4	5.3	3.8
64	A	60.2	26.8	8.6	3.9
65	A	71.1	5.0	5.8	17.6

*The sum of the percentages for each question may be less than 100% because the No Response category is not included. This category is less than 1% for any one of these questions.

Distribution of Jurisdiction Levels of Achievement

Table 26 indicates the percentage of jurisdictions classified as significantly above or below the provincial average for each reporting category.

Table 26: Grade 9 English Language Arts - Distribution of Jurisdiction Levels of Achievement

Reporting Category	% Below the Provincial Average	% Not Different From Provincial Average	% Above the Provincial Average
Total Test	22.1	57.1	20.7
Total Reading	15.7	60.8	23.5
Main Idea	15.3	70.8	13.9
Supporting Details	13.7	65.1	21.2
Vocabulary and Figurative Language	13.1	70.4	16.4
Organization of Events and Ideas	13.3	71.1	15.6
Conclusions	13.8	65.9	20.3
Literal	12.6	73.4	14.0
Inferential	14.4	60.2	25.5
Evaluation	16.2	66.7	17.1

GUIDE TO THE INTERPRETATION OF JURISDICTION RESULTS

In addition to their use in monitoring student achievement for the province as a whole, the results of the achievement tests are useful in comparing achievement in a particular jurisdiction with provincial results. However, care must be exercised in making these comparisons and in drawing conclusions from the data.

The following jurisdiction and school reports for each subject are provided for each jurisdiction under separate covers.

1. The Jurisdiction Summary Report contains jurisdiction equivalents of the provincial results that are given in all statistical tables in this report.

2. The School Summary Report contains the school equivalents of the provincial results that are given in all statistical tables in this report.

3. Individual Student Subtest Results are reported for each school.

These reports are confidential to the jurisdiction.

Differences Between Jurisdiction and Provincial Averages

Jurisdictions are provided with their average scores for each reporting category. These scores may be compared to the provincial average for the same reporting category. However, the importance of differences between jurisdiction averages and provincial averages is not always clear. To aid in the interpretation of differences between the averages, jurisdiction and school reports indicate when the difference is unlikely to be due to chance variation in the abilities of students. For the purposes of the provincial testing program, the 95% confidence interval is used. That is to say, if the probability is less than 1 in 20 that the difference is due to chance, the difference is very likely a real difference, and the jurisdiction average is classified as different from the provincial average. Otherwise, it is classified as not different from the provincial average. The provincial average for that reporting category determines the true population average. The standard deviation for the jurisdiction is used to estimate the standard error of the mean.

Because achievement levels are calculated by taking jurisdiction size into consideration, two jurisdictions with the same averages but of different sizes may be classified differently. The larger jurisdiction would be more likely to be above or below average, because the amount of chance variation would be less in larger jurisdictions, and the actual difference would represent a larger variation from the provincial average.

A test score does not indicate why a particular performance occurred, only that it did occur. Identification of reasons for that performance should be undertaken only when the results have been studied. There are a variety of factors that should be examined:

1. Student motivation. Consideration should be given to the degree to which students were motivated to perform to their levels of ability.

2. Student ability. While the notion of a confidence interval is designed to take into consideration year-to-year fluctuations in the average ability levels of students, it is possible that a group of students with a particularly high or low average ability may come through a system. This is much more likely to be a factor in small systems than in large ones.

3. Teaching and curriculum. Consideration should be given to the type of instruction students have received in the jurisdiction and the adequacy of curriculum implementation.